

Claims

- [c1] 1. An external strobe device for connecting to an image-capturing apparatus, the image-capturing apparatus comprising a housing and a transmission module installed inside the housing, the external strobe device comprising:
- a housing;
 - a strobe module installed inside the housing for providing light when the image-capturing apparatus captures an image;
 - a battery module installed inside the housing for supplying operating electric power of the strobe module;
 - a first electric port for connecting to the transmission module of the image-capturing apparatus and transmitting the electric power produced by the battery module to the transmission module to supply the operating electric power of the image-capturing apparatus; and
 - a transformer installed inside the housing and electrically connected to the battery module, the strobe module, and the first electric port for transforming an outputting voltage of the battery module into a standard voltage of the strobe module and outputting the standard voltage of the strobe module to the strobe module,

and for transforming the outputting voltage of the battery module into the standard voltage of the image-capturing apparatus and outputting the standard voltage of the image-capturing apparatus to the image-capturing apparatus via the first electric port.

[c2] 2.The external strobe device of claim 1 wherein the transmission module of the image-capturing apparatus comprises a second electric port for receiving the electric power transmitted from the first electric port to supply the operating electric power of the image-capturing apparatus, and a first signal port for transmitting signals to the external strobe device to operate the external strobe device.

[c3] 3.The external strobe device of claim 2 further comprising a control unit installed inside the housing and electrically connected to the strobe module and the transformer for controlling the external strobe device, and a second signal port electrically connected to the control unit for connecting the first signal port and receiving signals from the image-capturing apparatus.

[c4] 4.The external strobe device of claim 3 wherein the signal transmission between the first signal port and the second signal port utilizes an I2C interface.

- [c5] 5.The external strobe device of claim 3 wherein the signal transmission between the first signal port and the second signal port utilizes a UART interface.
- [c6] 6.The external strobe device of claim 3 wherein a driving signal can be transmitted from the first signal port to the second signal port for driving the strobe module to provide light.
- [c7] 7.The external strobe device of claim 3 wherein the electric quantity data of the battery module can be transmitted from the second signal port to the first signal port.
- [c8] 8.The external strobe device of claim 1 further comprising a power switch for turning on or turning off the external strobe device.
- [c9] 9.The external strobe device of claim 1 wherein the standard voltage of the image-capturing apparatus transformed from the outputting voltage of the battery module is 5 volts.
- [c10] 10.The external strobe device of claim 1 wherein the battery module contains a 3-volt Cr2 battery.
- [c11] 11.The external strobe device of claim 1 wherein the battery module contains two Ni-MH batteries.
- [c12] 12.The external strobe device of claim 1 wherein the

battery module contains two Li-On batteries.

- [c13] 13.The external strobe device of claim 3 wherein the electric transmission between the first electric port and the second electric port utilizes a USB interface.
- [c14] 14.The external strobe device of claim 1 wherein the image-capturing apparatus further comprises a camera battery module installed inside the housing of the image-capturing apparatus for supplying the operating electric power of the image-capturing apparatus.
- [c15] 15.The external strobe device of claim 1 wherein the image-capturing apparatus is a digital camera.
- [c16] 16.The external strobe device of claim 1 wherein the image-capturing apparatus is a digital camcorder.
- [c17] 17.The external strobe device of claim 1 wherein the image-capturing apparatus is a storage device with an image-capturing function.
- [c18] 18.An external image-capturing device for connecting to a mobile phone, the mobile phone comprising a first electric port for receiving external electric power to supply operating electric power of the mobile phone and a first signal port for transmitting signals to the external image-capturing device to control the external image-

capturing device, the external image-capturing device comprising:

a housing;

a phone camera module for capturing an image;

a strobe module installed inside the housing for providing light when the phone camera module captures an image;

a battery module installed inside the housing for supplying the operating electric power of the external image-capturing device;

a second electric port for connecting to the first electric port of the mobile phone and transmitting the electric power produced by the battery module to the first electric port of the mobile phone to supply the operating electric power of the mobile phone; and

a transformer installed inside the housing and electrically connected to the battery module, the phone camera module, the strobe module, and the second electric port for transforming an outputting voltage of the battery module into a standard voltage of the strobe module and outputting the standard voltage of the strobe module to the strobe module, transforming the outputting voltage of the battery module into the standard voltage of the phone camera module and outputting the standard voltage of the phone camera module to the phone camera module, and for transforming the outputting voltage of

the battery module into the standard voltage of the mobile phone and outputting the standard voltage of the mobile phone to the mobile phone via the second electric port.

- [c19] 19.The external image-capturing device of claim 18 further comprising a control unit installed inside the housing and electrically connected to the strobe module, the phone camera module, and the transformer for controlling the external image-capturing device, and a second signal port electrically connected to the control unit for connecting the first signal port to communicate with the mobile phone.
- [c20] 20.The external image-capturing device of claim 18 wherein the signal transmission between the first signal port and the second signal port utilizes an I2C interface.
- [c21] 21.The external image-capturing device of claim 18 wherein the signal transmission between the first signal port and the second signal port utilizes a UART interface.
- [c22] 22.The external image-capturing device of claim 18 wherein the electric quantity data of the battery module can be transmitted from the second signal port to the first signal port.
- [c23] 23.The external image-capturing device of claim 18

wherein the battery module contains a 3-volt Cr2 battery.

[c24] 24.The external image-capturing device of claim 18 wherein the battery module contains two Ni-MH batteries.

[c25] 25.The external image-capturing device of claim 18 wherein the battery module contains two Li-On batteries.

[c26] 26.The external image-capturing device of claim 18 wherein the mobile phone further comprises a phone battery module installed inside the housing of the mobile phone for supplying the operating electric power of the mobile phone.